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The Level of Urban Services in Canadian Resource Towns: A Comparative Analysis

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Introduction

This paper focuses on the preconditions for urbanization in Canada' s northern resource towns. These remote settlements' access to southern Canada is difficult at best. Although most are connected by road or railway, the costs involved discourage frequent travel. As a result, it is often said that these towns are more self sufficient in their economic and social activities than towns of similar size in the southern portions of the country where more developed city systems exist. This paper examines one aspect of this self sufficiency - i.e. the nature and extent of urban services in Canada's northern communities.

In a first section the paper examines the literature on this topic and then presents a framework for analyzing the differences that exist among the more highly specialized towns. In a final section, macro economic processes and the impact of the recent recession are examined in the light of proposals which have been made to deal with the problems of peripheral urbanization in Canada.

L Canadian Resource Towns and the Provision of Urban Services.

At the beginning of this century, only a few communities existed between Winnipeg and Vancouver. It has been estimated that approximately 1200 new communities have since been built giving Canada an experience in the development of new towns which few countries can match . Of more particular interest, of these 1200 communities, approximately 200 have been built in Canada' north to exploit its resources (Linn, 1978)

In the literature which deals with resource town development, great emphasis is placed on the need to attract and maintain a stable labor force. It has been estimated for instance that as a statistical average, the population of entire communities change in the course of a two or three year period. For

instance, the Canadian Mining Association has estimated that for 80 mineral mining operations in seven provinces, the Yukon and Northwest Territories. one third of the industry's labor force terminated employment with its (then) present employer. (C M A, 1974).

The costs of this turnover appear in two ways. First they are reflected as direct costs experienced in attracting and training replacements and second in lost production due to vacancies or operation with inexperienced staff. In order to minimize what has been identified as one of the most important problems associated with new town development, it has often been suggested that these towns need a more fully developed range of urban services than towns of equivalent size located in the south (Wolforth and Leigh, 1971).

Furthermore the range of services available in resource centers is also seen to be influenced by principles of town planning which have sought to transform the image of these towns from the 'bunkhouse' communities to a standard more nearly appropriate to modern urban settlement planning (McCann, 1982). These developments have been further encouraged by the involvement of provincial governments in the planning as well as the financing of these urban centers. Fairly typical of this attitude are the the opinions expressed in an article by a consulting engineer and planner in which he suggests that greater profits can be made by attracting and keeping a labor force if the amenities for a viable and satisfying environment are provided (Moffat, 1969). Among the amenities cited 1. adequate shopping facilities providing a wide range of requirements, 2. good educational facilities for both children and adults, 3. adequate facilities and activities to fill all leisure hours 4. the ability to relate to the outside by radio, TV, movies, and papers.

In a more analytical vein, Helle, a Finnish geographer, examined the

relationship between service facilities and population growth in the northern communities of Finland. As one might expect, he found the demand for services and the extent to which they are provided are directly dependent on the size of the population. Furthermore expansion of the service sector showed a clearly demonstrated dependence on the population growth characteristics of the town - growing towns showing more service sector development and conversely declining towns having an underdeveloped sector. In fact Helle suggests that a cycle in a town's development is observable which relates to the rise and fall ultimately of the commodity upon which the town depends for its economic viability (Helle, 1969). Similar cycles have been alluded to by Lucas with respect to the demographic characteristics of resource towns (Lucas, 1971).

Clearly one would expect the service sector to be sensitive to the market which they have to serve.This phenomenom has been studied elsewhere and a general relationship established- services follow population according to thresholds. The point in question however is whether if one controls for population size whether isolated northern resource communities have a more highly developed service sector than integrated southern communities of a similar size. Previous studies by Maxwell suggests that Canadian cities tend to have minimum requirements which were significantly lower than equivalent sized American cities (Maxwell, 1966). Maxwell explained this difference in terms of the fact that, except for Southern Ontario, few Canadian cities were included in city systems and thus had to provide a greater level of services for their population. This reasoning, a fortiori, is advanced by some to suggest that northern communities should have a service sector development which exceeds that of equivalently sized southern communities. In the following section the extent to which northern resource communities have level of services which

exceed towns of equivalent size in the south will be empirically formulated and tested.

II. The Data

The level of service sector activities in resource towns is analyzed utilizing labor force data. Labor force activity data in the 1981 Census of Population is compiled from a 20% sample. The population 15 years of age and over is distinguished between those who are in the labor force and those who are not. Total labor force is then distinguished between those who are experienced i.e.persons who have worked since 1981 and who are actively seeking work and those who are inexperienced i.e. persons who last worked in 1980 or never worked in lifetime but who are actively seeking work.

From this labor force data, those resource communities which had 30% of their labor force employed in three categories of activities were then identified. Towns or municipalities which had 30% or more of their labor force employed in 1. metal refining and mining operations, 2. non metal mining and refining, and 3. wood industries and pulp and paper. In all seven three digit SIC categories were utilized to create the above mentioned resource community categories.

To test the exploratory hypothesis, the numbers the number of persons in the labor force for the two digit categories of 1. Retail trade, 2. Wholesale trade, 3. Construction, 4.Transportation 5. Community and Personal Services and 6. Public Administration and Defence were retained from the Census of Population. In all cases the presence of these activities was measured in terms of the percentage of the labor force employed in these categories. Each of these categories of services represents a component of the service sector thought to be of importance in maintaining the quality of life in resource communities. In resource communities where wages are generally higher, retail

trade and community and personal services are thought to be of particular importance since they provide residents with the range of goods and services which makes for the satisfaction of perceived needs in our consumer oriented society. Wholesaling and Transportation, on the other hand, provide some indication of the regional importance, if any, of the community. Public Administration and Defence gives some indication of the quantity of public goods and services available in a resource community and thus some indication of the relative importance which various levels of government accord to these communities in comparison to simalarly sized communities in the south.

The advantage of the labor force activity data of the 1981 Census is that the random rounding procedure allows data to be disclosed for even the smallest municipalities or census subdivisions. The use of labor force data is clearly subject to certain limitations in that it is highly aggregated by category and possibly subject to scale economies as towns become larger. Furthermore employment can only be a surrogate for what in fact would be a more direct measure- that is some measure of the quantity, variety, and quality of the services available.

The result was a matrix in which communities were retained as specified by the criteria for inclusion i.e. 30% or more of the labor force in metal mining, non metal mining, and pulp and paper. In performing the analysis, the data were organized into separate groups of matrices, one for each of the population categories utilized in the analysis. In all, four population categories were used. Excluded from the analyses were those communities which had populations in excess of 30,000 as well as those which had populations of than 1000. This latter category was excluded because,although a number of them met the selection criteria, their percentage employment in the various employment

categories did in fact fluctuate widely because of the random rounding procedures which can seriously inflate or deflate actual values in those cases where the original values are small.

The first size category included those municipalities with populations of between 10000 and 29000 inhabitants, the second 5000 to 9999, the third 2500 to 4999 and the last 1000-2499. In all the cases the benchmark value for all Canadian municipalities in that size range were used. As a result a series of four matrices were constructed, one for each of the size categories identified above. In all cases the values for each service category in resource towns were compared with the comparable Canadian value associated with that category (Tables 1, 2).

III. The Analysis:

The initial test of the hypothesis involved an examination of the mean values for each of the population categories. In tables 1 and 2, we have respectively the values all Canadian municipalities by size class and for the 79 Canadian resource towns included in the analysis. Two of the resource towns were excluded from the analysis because they were constituent parts of census metropolitan areas.

An examination of these tables reveals that for all six categories of services, the average percentage employment is in all cases below the value for the corresponding size class of Canadian municipalities. It is therefore clear that at this aggregate level, there would appear to be little evidence supporting the self-sufficiency hypothesis for Canadian resource towns. A more careful analysis of the summary statistics however suggests that that there are notable deviations from the mean values. The co-efficient of variation permits one to

assess the degree to which the mean is an accurate summary statistic by comparing the coefficients of variation for each service in the two tables. In all four of the population categories there are values for the coefficient of variation which exceed comparable values for services indicated in Table 1. Furthermore an examination of the maximum values for individual services indicates that in a number of cases the benchmark values for resource towns exceeds the values for the corresponding class of Canadian municipalities. This suggests that there may be some significant variations by type and location. In order to identify possible systematic patterns of variation, a methodology is required which allows for a more detailed examination of the variation which exists among resource towns.

A. Service Sector Development and Resource Towns: A Comparative Framework

The hypothesis that isolated resource communities have a more highly developed service sector than equivalently sized southern communities appears to have little foundation given the comparison of mean values which was described above. Nevertheless it was also shown that the variations around the mean were significant and that some resource towns did have a more highly developed service sector. In order to identify these particular towns, a methodology is required which will assist in revealing patterns in the mass of data which the 1981 Census of labor Force Activity provides for the 5,251 Canadian census subdivisions.

The framework for analysis which is proposed is drawn from Tukey, a statistician, who has long emphasized the need for exploratory rather than confirmatory analyses(Tukey, 1970). Tukey has proposed that this type of analysis be guided by a reasonable hypothesis which provides an initial basis for summary

comparisons and that the framework permit detailed exploration of the data from different perspectives to ensure that the information is in the data and not in the technique or particular configuration of the analysis.

An approach which meets Tukey's suggestion is to compare each resource town's values for employment in each service category with a benchmark value derived for towns of that size in all of Canada. By taking the linear difference for each of the respective elements i.e. the town's value and the corresponding Canada size class value, a deviance matrix can be constructed which identifies which services for a given resource town exceed the national benchmarks. Several different types of summary measures can be generated to reduce this pattern of deviance to a single measure for each row. In this paper use will be made of an index of positive deviance, a summary statistic, so as to identify those towns which exceed in one or more categories, the the national size class values (see Tables 3-6). In turn one can divide each value for individual resource towns by the Canadian benchmark for that size class to obtain a ratio. The result of this operation is a matrix with measures of relative specialization. A value greater than 1.00 indicates a greater than average concentration of the particular characteristic in that category. Conversely a value of less than .5 would indicate a presence of that service which is half the national value for that size class.

B. The Number of Services

Clearly there is much that can be said about the information contained in Tables 3-6. In the first place it is clear that there are far fewer towns with indices of positive deviance which exceed the benchmark national values. There are only two towns in the largest size category, six in the category 5000-9999, eight in the category 2500-4999 and 29 in the category 1000-2499 (see Table 7).

Proportion of Services Exhibiting Positive Levels of Deviance

Size Class	Services with Positive Deviance	All Services	Percentage
10000-29999	3	42	7.1
5000-9999	6	60	10.0
2500-4999	9	114	7.8
1000-2499	29	258	11.2

Source: Compiled from Tables 3-6 in Appendix

In percentage terms the values remain reasonably constant with seven percent of services in the largest class size exceeding the national benchmark value for that size class. Subsequent size categories have values of 10, 7.8 and 11.2 respectively. Thus although the number of towns which have values which exceed the national values increases with smaller town size, the proportion which these services make up of the total number of services offered remains relatively constant. These findings need of course, to be compared with the relative incidence of values above the national benchmark for those towns which are in the control group. Such a task, involving as it does, more than 2000 communities in Canada is beyond the scope of this paper.Nevertheless the evidence adduced to so far suggests that the results might not be all that different. Some might suggest that values which exceed the national benchmark in any one town can be only explained in terms of particular or unique circumstances. In an attempt however to give a more general explanation to the results obtained, it may be possible to garner insights from the literature on optimum city size. A considerable amount of literature exists on the relationship between city size and the per capita costs of providing municipal services. Unfortunately for this investigation, the studies have concentrated primarily on communities larger than the typical resource town. Bodkin and Conklin (1971) in one study based on 90 Ontario communities suggested

> for the categories of water supply and public works there is some evidence of the existence of economies of scale, which, however, appear to be exhausted by a population size of 150,000 or 200,000 is reached. On the other hand, our calculations suggest that quite small municipalities, even those with populations in the range of 5,000 to 10,000 persons, can provide fire nd police protection, sanitation, and waste removal, conservation of health, recreation, and general government services as cheaply, or even more cheaply than can the larger municipalities (Bodkin and Conklin, 1971)

The authors caution against the unqualified use of their findings but evidence from other sources suggests that the cost of development per capita decline sharply up to a population of between 5,000 and 10,000 persons. For example, the costs of developing per capita for Clifton Creek, a Yukon community of 500 persons, was estimated at $11,5000 (James and Watson, ND). For Leaf Rapids, Manitoba with an anticipated population of 12,000, the costs of development were estimated at $7,400.00 (Leaf Rapids Development Corporation, 1970).For Thompson, Manitoba a complete set of cost figures were available between the years 1958 and 1969 (Heidlin, Menzies, 1971). The per capita costs of development had declined to between $3,600 and $4,000by the time the community had reached 16,000-18,000. In all cases these estimates are current dollar values and therefore not directly comparable because the towns were built at different times. Yet the differences are great enough to indicate some relationship with settlement size. These apparent economies of scale explain why the percentages except for the last class in Table 7 are relatively consistent.The only category for which the the number of services which exceed the national benchmark value is found in the smallest size class. In this class are found towns which range from 1000-2999. This class may have more services that exceed the national benchmark values, because it includes towns which

have populations of less than 2,000. Given the the indication from the Bodkin and Conklin study that towns of 2,000 or more are likely to be efficient providers of services, it may be that this class which straddles the threshold value has a higher level of services than is warranted because these services must be provided in isolated communities irrespective of the cost.

C. The Variety of Services

Another way in which Tables 3-6 might be analyzed is by comparing which services exceed benchmark values in resource towns. Retailing emerges as the category with the largest proportion (28%) of services having values which exceed the value for towns of equivalent size in Canada (see Table 8). A close second is the transportation category with 21% of the services having values in excess of the national average. Community and public services also emerge as a categories with above representation in resource towns with values of 20% and 18% respectively. For four of the classes of services, therefore, the values are

Table 8
Distribution of Services in Resource Towns
Exceeding National Benchmark Values
By Size Class

Size Class	-Retail	Whole sale	Construc- tion	Transpor- tation	Public Services	Community Services	Total Services
4	1			1	1		3
5	2			1		3	6
6	2	2		4		1	9
7	15	4	3	9	12	10	53
Tot.	20	6	3	15	13	14	71
%	28	8	4	21	18	20	100

Source: Compiled from Tables 3-6 in Appendix

within 10% of one another. For only two types of services do the percentage values fall below the level of the others i.e. construction (8%) and wholesaling

(4%). In the case of construction one might surmise that since these communities have been built to accommodate a quite specifically determined force, it is conceivable that once the town is built, very little new construction occurs afterwards. When new basic activities are added to the town it is possible that construction may increase its employment again. In the case of wholesaling, one might expect this value to be small because of the isolation of these towns, and the lack of a surrounding populations to be served.

Viable service activities, as noted above, can be expected with a population of 2,000. If one assumes a population to labor force ratio of 2.5:1:0 and a basic /service employment of 1.0/1.0, then a resource town employing 400 workers would support approximately 2,000 people. The literature on central place thresholds in the Prairies suggests such a community would be able to provide approximately 30 distinct commercial services including a hospital, general medical services, elementary and secondary schools, radio and television outlets, regularly scheduled transportation and a variety of recreational facilities (Stabler, 1973). With a population of less than 2000 either the higher order services are not provided or provided at a higher per capita cost.

In order for a resource town to be successful, however, living and working conditions need to be simultaneously satisfied. Although a range of services is required in order to satisfy people's needs for a reasonable quality of life, there is no indication in the data we have presented as to what importance different services have in the perceptions of residents of isolated resource towns. Data in this regard are notably scarce. One source however suggests that the rank order we might theoretically ascribe might not necessarily be what residents of these communities consider important. People living in Fort McMurray, Alberta were asked to complete a questionnaire which

asked them to identify two items out of a list of ten which were considered most important in making life enjoyable in a community such as the one they were living (Mathiasson, and Kerri, 1971). The interpretation given to this question are summarized inn Table 9.

Table 9

Responses to Item Concerning Services and Facilities in a Fort McMurray

Service or Facility	Frequency
Entertainment and Recreation	152
Income relative to Cost of Living	143
Housing and Accommodation	124
Good Access to Cities in South	117
Working Conditions	88
Radio and TV	68
Educational Facilities	67
Medical Facilities	52
Religious Facilities	13
Retail Facilities	7

Source: Mathiasson and Kerri, 1971

Mathiasson's interpretation to the results of his questionnaire was as follows:

> It will be noticed that responses appear to cluster into three groups. Highest priority is given to entertainment and recreation facilities and rather surprisingly, lowest priority is given to retail facilities. Certain trends may be discovered on close examination of these clusters. It would appear that the average resident of a northern community-if we may generalize from our Fort McMurray sample-feels that his or her wants are most satisfied if entertainment facilities are available, real income is fairly high, housing is good, and there are frequent opportunities to visit cities in the south. Of secondary importance, but crucial if there first four are considered satisfactory, are working conditions, radio and television reception, schools and medical services. Of least importance are religious facilities and retail outlets. It may be that retail facilities are not so critical so long as there are regular opportunities for shopping in southern cities. Mathiasson, 1970

Clearly the results are of limited generality, as Mathiasson himself suggests, but they do indicate that community satisfaction which is important in maintaining a stable labor force may not be based on those services which are considered

basic. Since resource towns have a generally higher income labor force , some higher level services or services of a particular type i.e. recreational services might be necessary to maintain labor force stability in resource towns.

IV. Resource Towns, Location Theory and Economic Recessions

It might be reasonable to suppose that after building more than 200 resource communities, considerable expertise would have emerged in developing viable long term settlements.In fact, however, these settlements are particularly vulnerable to two types of problems: a. exhaustion of the resource (particularly as it applies to non renewable resources but also applying to a certain extent to renewable resources and b. adverse movements of a the world price for the commodity which is influenced not only by economic recession but also by the coming into the market of lower cost producers.

The last recession was particularly disquieting with both of the factors identified above at play. In the minerals sector, there have been a number of announcements which have led to the closing or anticipated closing of a number of resource towns. Schefferville, Uranium City, Faro, Gagnon and Murdochville are just some of the towns which have been in the news recently. Some of these towns are iron ore producers, a sector which has been particularly devastated by the last recession. The emergence of large, high quality producers of hematite from Australia and Brazil coupled with the recession has been particularly devastating for Canadian iron ore producers. Similar developments have severely affected nickel production in towns such as Sudbury and Thompson.

In the pulp and paper sector, developments have not been nearly as dramatic but nevertheless just as worrying for the long term. P.E. Wrist, the vice president of the Pulp and Paper Research Institute of Canada has indicated that Canada is in danger of becoming a marginal supplier of paper products to world markets. Canada's position as a cost leader in pulp and paper products has been claimed by the Scandinavian producers as well being challenged by Third World producers such as Brazil. The recession, stimulating as it did currency

devaluations, has meant price gains of 66% for Finnish producers, 72% for Norwegians, and a price doubling for Swedish forest companies (C.P, 1985). These competitive advantages gained by devaluations have been also reinforced by the fact that in the area of management, product development, and reforestation the Scandinavian producers are away out in front. Clearly the long term outlook is not promising. In the following section we examine the relationship between technology and the location of resource towns in the light of various proposals which have been made for maintaining viable communities in the North.

A. Settlement History and Resource Development.

One of the most enduring frameworks for dealing with Canadian urban settlement has been the staple theory as developed by H. Innis and W.A. Mackintosh. Staples can be identified as industries based on agricultural and extractive resources, not requiring elaborate processing and finding a large portion of their market in international trade. These products can range from agricultural commodities involving mainly storage and transportation facilities to industries generally referred to as primary industries i.e where the preliminary processing of natural resources takes place in an isolated resource towns.

The fundamental assumption of the staple theory is that exports are the leading sectors of the economy and set the pace for economic growth. In Canada the relative abundance of land relative to labor and capital created a comparative advantage in resource intensive exports. It is these exports which defined the pace and direction of Canadian economic development and ultimately settlement. The work of Innis and Mackintosh clearly identifies the impact of these staples, first fur, then lumber, wheat, pulp and paper and finally non ferrous and ferrous metals on the settlement history of the country.

The key factor in explaining the process according to Baldwin was the

role of the production function which defines the degree of factor substitutibility and the nature of the returns to scale (Baldwin, 1956). With the production function identified a number of things follow- demand for factors, intermediate inputs and the possibilities for further processing. The development of exports in time created an impetus for the establishment of productive linkages across a wide variety of economic sectors.

The initial outposts of settlement created by the needs of the fur trade and the settlement of the Ottawa valley which was tied to the development of the square timber trade are other examples of how resource staples influenced the settlement of Canada. Overall Innis saw the process of settlement as being largely the result of the successive development of staples which promoted an east west growth gradient. The early emphasis on agricultural staples did not create the need to go beyond this advancing western frontier because they dealt with a resource which was continuously distributed - i.e agricultural land.

The technological characteristics of the production functions for the later staples however broke the pattern of continuous settlement which had hitherto been evident. Throughout the development of staple exports and the associated settlement, an important role was played by technological developments. Influenced by Schumpeter, Innis saw innovation as the prime determinant in the conferring of comparative advantage on certain regions and locations. Although these technological factors were just as important for the early staples (cod, fish, fur and agricultural commodities, the net locational effect was to promote settlement in an east west wave. Later staple exports, however, had a somewhat different impact in that they served to confer comparative advantages on locations which were isolated from the main axis of east west migration. In the case of the pulp and paper industry, the advent of the new wood pulping

technologies and the associated increase in demand for newsprint created by the brand naming of products and universal literacy created the need for paper producing technology which could satisfy this emerging demand. (Roberge, 1972). Eventually the emergence of the high speed Fourdrinier paper making machine and pulping processes dependent on specific varieties of forest species created the need for mill locations near large supplies of these particular species (Roberge, 1977). The development of the selective flotation process made possible the mining of the complex ores of the Canadian Shield. Furthermore production was clearly constrained to locations where preliminary processing could take place before transshipment. Most of these settlements were located on the Canadian Shield far removed from the settlements which had already taken place.

Clearly technological developments made these towns economical if not least cost producers of their respective commodities. It follows that technological as well as market changes can just as easily influence these towns adversely (Roberge, 1975). Thus not only are these towns vulnerable to adverse changes in world prices and economic conditions because of their extreme specialization but also there is the added possibility that their respective technologies may become obsolescent relative to producers employing newer and more efficient technologies. Given their vulnerability, the challenge has been to provide these towns with the possibility of weathering these technological and international market challenges. The technological challenge is is one which requires the ability to do technological forecasting and then to invest in the areas which are likely to be profitable. Unfortunately low rates of return in many of these resource industries make innovative investments highly unlikely and thus the quandary of the resource town.

B. Resource Development and Resource Towns: Some Alternatives

The inherent instability of resource towns has led to a number of proposals for reducing the risks associated with building isolated single enterprise communities. Among the alternatives proposed is diversification, integrated regional planning, regional resiliency, commuting, and the relocatable community. In this paper we examine only the first three alternatives simply because they involve solutions which assume that permanent settlement in the north is possible and feasible.

1. Diversification

Diversification of the economic base is frequently mentioned as a means of introducing stability in isolated resource towns. There is no question that substantial diversification would enhance the stability of communities but the likelihood that it can be a general solution for most resource towns is remote. As Stabler has indicated, to create stability in a community where approximately one half the labor force is employed in a single basic industry would require expansion of other activities to the point where the resource industry accounted for no more than ten percent of total employment. This would imply, given the basic/non basic ratios already alluded to an expansion of an additional 1,500 basic workers for a total population growth from approximately 2,500 to 8,000-10,000 (Stabler, 1978). For most resource towns this is not a distinct possibility since high transportation and labor costs in a remote area coupled with the climatic and topographic constraints make profit maximizing entrepreneurs shy away from these locations.

2. Regional Economic Development and Community Resilience

The difficulty associated with creating either permanence or stability by fostering diversification within the community has resulted in attempts to plan

the development of these isolated resource areas as development regions. By planning the development in such a way that a hierarchy of central places make possible a community capable of producing a greater range of commercial, health educational, social and recreational facilities eliminates duplication, lower the cost of services, and ensures that the exhaustion of one ore body will not lead to the demise of the regional center because other communities would continue to exist.

Paget and Rabnett argue for a regional resiliency approach which relies quite heavily on commuting in order to link declining communities with resilient communities. Such an approach implies that people be willing to commute over 50 miles to and from work a possibility which may exist in the temperate portions of British Columbia but which is impractical for most of the rest of Canada (Paget and Rabnett, 1983). Nevertheless the authors pose important questions such as when do workers trade off the distance to travel with the advantages of an existing community. In areas where resource developments are situated within 45 km from the regional community commuting to the center is a possibility. Flin Flon is an example of a community that is in the fortunate position of being able to serve several mines, but that appears to be more the result of good luck rather than planning.

3. Integrated Regional Development

A variant of the regional center approach is the integrated regional development approach that emphasizes a regional planning framework much along the lines developed in the Mid-Canada corridor proposal. The proponents of this approach saw the systematic development of an area as not only enhancing the profit motive by providing for a productive labor force but also as providing Canada with a plan which represented an attempt to think out ways in which

Canadian urban society could be oriented towards Canada's geographic location (Essays, 1969). Unfortunately this approach requires implementation of a plan which goes beyond the capabilities of a single company, provincial agency, or for that matter a single province requiring as it does of enormous investments infra structure before productive activities can take place. Furthermore , the prospects for a region are not likely to become fully known until much later and as a result community settlement decisions would be made in the absence of full information.

Conclusion

This paper has examined the hypothesis that resource towns have a higher degree of self sufficiency then towns of equivalent size located in the southern portions of the country. A higher degree of self sufficiency was defined in terms of above national percentage values for employment in aggregated service categories. The evidence presented was mixed at best with only a relatively low percentage of total services, ranging from 7% to 11%, exceeding national averages for those services. This suggests that it is probable that resource towns, except for the very smallest, are large enough to provide the economies of scale for all the basic services. Furthermore evidence has been presented which suggests that the term 'basic' might be perceived by residents of these communities in a somewhat different way than is generally supposed with services dealing with entertainment being particularly important.

In a final section we examined how some of these communities fared in the last recession and surveyed some of the alternatives to provide additional stability to these towns. Even the generally held panacea of comprehensive regional planning was shown to be lacking in providing a firm basis for the continued existence of these towns. Given their twin vulnerability to

technological change and international market fluctuations, their narrow economic can be jeopardized quite easily. The objective then is to plan for eventual decline. Many questions remain however in dealing with this issue. Evaluative research dealing with the social implications for the worker and his family is urgently required. While other countries, notably Australia, have developed extensive bodies of literature on this theme , very little comparable information is available for residents of resource based communities in Canada.

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TABLE 1

MEAN VALUES FOR SELECTED SERVICES BY POPULATION SIZE CLASS
CANADIAN MUNICIPALITIES

VARIABLE	N	MEAN	MINIMUM VALUE	MAXIMUM VALUE	RANGE	C.V.
POP=10000-29999						
RETAIL	200	0.11887278	0.06416132	0.21716649	0.15300517	20.252
WHOLESALE	200	0.04258137	0.00620767	0.13180418	0.12559650	44.504
CONSTRUCTION	200	0.06152646	0.01329056	0.14758751	0.13429695	43.729
TRANSPORTATION	200	0.07389845	0.02556480	0.19886899	0.17330419	38.254
PUBLIC ADM.	200	0.07486541	0.01335159	0.47870968	0.46535809	80.281
COMMUNITY SERV	200	0.27030561	0.09160305	0.51782217	0.42621912	22.773
POP=5000-9999						
RETAIL	291	0.11495296	0.03888889	0.21439510	0.17550621	27.934
WHOLESALE	291	0.03816517	0.00209644	0.12402089	0.12192445	49.695
CONSTRUCTION	291	0.06598423	0.00595238	0.19471947	0.18876709	41.302
TRANSPORTATION	291	0.07217877	0.00892857	0.44939966	0.44047109	64.361
PUBLIC ADM.	291	0.07171432	0.00889680	0.65178571	0.64288892	102.082
COMMUNITY SERV	291	0.24675325	0.07777778	0.61425577	0.53647799	28.675
POP=2500-4999						
RETAIL	518	0.11132107	0.01007557	0.21987315	0.20979758	33.603
WHOLESALE	518	0.03758531	0.00000000	0.16172507	0.16172507	62.050
CONSTRUCTION	518	0.07003901	0.00300300	0.20000000	0.19699700	46.098
TRANSPORTATION	518	0.06907850	0.00420168	0.45307443	0.44887275	61.969
PUBLIC ADM.	518	0.06682380	0.00367647	0.77329975	0.76962328	91.257
COMMUNITY SERV	518	0.24414057	0.05037783	0.56269113	0.51231330	30.230
POP=1000-2499						
RETAIL	1109	0.10127757	0.00000000	0.27586207	0.27586207	43.423
WHOLESALE	1109	0.03418532	0.00000000	0.12658228	0.12658228	77.689
CONSTRUCTION	1109	0.07302466	0.00000000	0.33009709	0.33009709	56.884
TRANSPORTATION	1109	0.06777194	0.00000000	0.51955307	0.51955307	66.168
PUBLIC ADM.	1109	0.05397697	0.00000000	0.38857143	0.38857143	81.120
COMMUNITY SERV	1109	0.23108303	0.03921569	0.82125604	0.78204035	36.225

TABLE 2
MEAN VALUES FOR SELECTED SERVICES BY POPULATION SIZE CLASS
CANADIAN RESOURCE TOWNS

VARIABLE	N	MEAN	MINIMUM VALUE	MAXIMUM VALUE	RANGE	C.V.
POP=10000-29999						
RETAIL	9	0.10428255	0.07604017	0.12215909	0.04611892	13.546
WHOLESALE	9	0.02006950	0.00778210	0.03080308	0.02302098	36.793
CONSTRUCTION	9	0.04123796	0.02159624	0.05810617	0.03650993	35.000
TRANSPORTATION	9	0.04702920	0.02556480	0.09109043	0.06552562	40.770
PUBLIC ADM	9	0.04988446	0.02347418	0.08909574	0.06562157	41.153
COMMUNITY SERV	9	0.21836237	0.17652582	0.26808511	0.09155928	15.549
POP=5000-9999						
RETAIL	10	0.09778382	0.06679389	0.13674322	0.06994932	23.688
WHOLESALE	10	0.01918175	0.00736377	0.03720930	0.02984553	51.624
CONSTRUCTION	10	0.03101523	0.01639344	0.05891016	0.04251672	47.683
TRANSPORTATION	10	0.04492387	0.01395349	0.09736842	0.08341493	55.160
PUBLIC ADM	10	0.03993219	0.01162791	0.05000000	0.03837209	29.047
COMMUNITY SERV	10	0.20287718	0.14885496	0.26509573	0.11624077	21.533
POP=2500-4999						
RETAIL	19	0.07337028	0.02608696	0.12225705	0.09617010	34.705
WHOLESALE	19	0.01399862	0.00000000	0.04176904	0.04176904	87.475
CONSTRUCTION	19	0.03023016	0.00300300	0.05867347	0.05567047	48.050
TRANSPORTATION	19	0.04526615	0.00420168	0.10121457	0.09701289	65.669
PUBLIC ADM	19	0.03386536	0.01501502	0.05923345	0.04421843	36.549
COMMUNITY SERV	19	0.18447923	0.11594203	0.29216152	0.17621949	22.234
POP=1000-2499						
RETAIL	43	0.07997031	0.01324503	0.17293233	0.15968730	47.914
WHOLESALE	43	0.01346512	0.00000000	0.04672897	0.04672897	88.371
CONSTRUCTION	43	0.03275849	0.00000000	0.10937500	0.10937500	73.887
TRANSPORTATION	43	0.04252428	0.00000000	0.11737089	0.11737089	65.215
PUBLIC ADM	43	0.04446329	0.00000000	0.09340659	0.09340659	42.793
COMMUNITY SERV	43	0.18907554	0.12162162	0.26146789	0.13984627	20.665

TABLE 3

POSITIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION 10000-29999
AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES	POSITIVE DEVIANCE
1	LABRADOR CITY	METAL MINING	-0.7202	-1.5609	-4.2704	-3.9258	-5.0626	-9.2374	0.00000
2	ELLIOT LAKE	METAL MINING	-1.3363	-3.0604	-2.9817	-4.8435	-4.6752	-5.3085	0.00000
3	THOMPSON	METAL MINING	-1.0287	-1.6634	-3.3050	1.7090	1.4996	-3.4857	3.20862
4	KITIMAT	METAL MINING	-4.1960	-2.0379	-0.6194	-4.1719	-2.9624	-7.8082	0.00000
5	LA TUQUE	WOOD PROCESSING	0.4159	-2.1067	-3.3997	-1.6235	-1.9176	-0.2802	0.41591
6	KAPUSKASING	WOOD PROCESSING	-0.1404	-2.6581	-3.4513	-2.6340	-0.6866	-0.0815	0.00000
7	POWELL RIVER	WOOD PROCESSING	-1.1385	-3.4118	-1.2160	-2.8086	-3.3633	-3.6993	0.00000

RELATIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION SIZE CLASS
AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES
1	LABRADOR CITY	METAL MINING	0.93897	0.627472	0.335867	0.46948	0.31679	0.656474
2	ELLIOT LAKE	METAL MINING	0.88676	0.269596	0.536279	0.34547	0.36907	0.802583
3	THOMPSON	METAL MINING	0.91282	0.603006	0.486003	1.23095	1.20237	0.870370
4	KITIMAT	METAL MINING	0.64441	0.513623	0.903673	0.43623	0.60022	0.709624
5	LA TUQUE	WOOD PROCESSING	1.03525	0.497216	0.471276	0.78061	0.74122	0.989582
6	KAPUSKASING	WOOD PROCESSING	0.98810	0.365612	0.463254	0.64405	0.90734	0.996970
7	POWELL RIVER	WOOD PROCESSING	0.90352	0.185730	0.810888	0.62046	0.54611	0.862427

TABLE 4

POSITIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION 5000-9999
AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES	POSITIVE DEVIANCE
1	PORT-CARTIER	METAL MINING	-1.9579	-2.0695	-3.7337	2.3868	-2.4247	-5.6542	2.38684
2	OHAPING FALLS	METAL MINING	-4.6206	-0.9174	-4.6608	-5.2508	-3.4040	-9.5845	0.00000
3	FLIN FLON (PART)	METAL MINING	-2.7174	-1.1792	-3.8991	-1.8884	-3.3889	0.1074	0.10737
4	KIMBERLEY	METAL MINING	-0.2543	-3.0436	-0.8690	-3.8154	-2.6117	2.0396	2.03957
5	TRAIL	METAL MINING	2.3743	-2.4230	-4.8811	-2.3396	-3.6897	-0.9836	2.37432
6	PORT HARDY	METAL MINING	2.0333	-1.0450	-1.1190	-1.1962	-2.7565	-5.8375	2.03333
7	BLACK LAKE	NON METAL MINING	-1.0674	-0.0591	-4.4344	-5.9547	-5.8672	1.1114	1.11140
8	WINDSOR	WOOD PROCESSING	-2.6043	-2.6930	-3.9339	-5.3935	-2.0300	-8.3830	0.00000
9	IROQUOIS FALLS	WOOD PROCESSING	-2.6428	-2.7199	-3.9331	-1.8730	-2.0830	-5.7421	0.00000
10	MACKENZIE	WOOD PROCESSING	-3.7590	-2.4685	-5.1207	-3.2516	-2.1120	-8.8962	0.00000

RELATIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION SIZE CLASS
AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES
1	PORT-CARTIER	METAL MINING	0.82673	0.452520	0.447680	1.32474	0.655087	0.76893
2	OHAPING FALLS	METAL MINING	0.59110	0.757300	0.310538	0.28561	0.515783	0.60832
3	FLIN FLON (PART)	METAL MINING	0.75952	0.688037	0.423204	0.74308	0.517936	1.00439
4	KIMBERLEY	METAL MINING	0.97749	0.194809	0.871452	0.48090	0.628487	1.08335
5	TRAIL	METAL MINING	1.21012	0.358993	0.277946	0.68169	0.475148	0.95981
6	PORT HARDY	METAL MINING	1.17994	0.723556	0.834471	0.83726	0.607895	0.76144
7	BLACK LAKE	NON METAL MINING	0.90554	0.984373	0.344021	0.18984	0.165404	1.04542
8	WINDSOR	WOOD PROCESSING	0.76953	0.287555	0.418060	0.26619	0.711238	0.65742
9	IROQUOIS FALLS	WOOD PROCESSING	0.76613	0.280442	0.418174	0.74517	0.703698	0.76534
10	MACKENZIE	WOOD PROCESSING	0.66734	0.346951	0.242507	0.55760	0.699578	0.63644

TABLE 5

POSITIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION 2500-4900 AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES	POSITIVE DEVIANCE
1	WABUSH	METAL MINING	-2.9929	-2.6386	-5.0429	-1.5829	-4.2100	-3.406	0.00000
2	MURDOCHVILLE	METAL MINING	-6.3455	-3.4097	-7.5997	-5.7388	-5.2085	-8.204	0.00000
3	GAGNON	METAL MINING	-3.0761	-3.3566	-6.4866	0.4805	-3.8831	-11.399	0.48049
4	FERMONT	METAL MINING	-6.6505	-3.4475	-7.3751	-4.5778	-4.0853	-8.634	0.00000
5	CHAPAIS	METAL MINING	-4.6000	-3.7100	-2.8219	-3.4244	-4.3662	-5.370	0.00000
6	MANITOUWADGE	METAL MINING	-3.6369	-1.4149	-5.9328	-5.3007	-2.4477	-7.727	0.00000
7	URANIUM CITY AND DISTRICT	METAL MINING	-2.8361	-3.0131	-5.4610	1.0739	-0.7867	-9.137	1.07394
8	LOGAN LAKE	METAL MINING	-3.2870	-3.2898	-4.9588	-6.5198	-2.5083	-8.574	0.00000
9	SHIPTON	NON METAL MINING	-6.8252	-2.7812	-4.8040	-5.0824	-4.2332	-5.544	0.00000
10	ESTERHAZY	NON METAL MINING	1.0274	-2.5606	-3.6854	2.6385	-4.4111	-2.281	3.66594
11	GRANDE CACHE	NON METAL MINING	-1.0209	-2.6416	-4.4812	-0.3161	-2.6502	-5.530	0.00000
12	ELKFORD	NON METAL MINING	-8.2413	-3.4201	-3.8420	-4.9110	-4.6810	-12.526	0.00000
13	SPARWOOD	NON METAL MINING	-6.0031	0.3716	-2.0327	-0.5624	-3.9039	-4.987	0.37163
14	DALHOUSIE	WOOD PROCESSING	-2.2989	-2.2848	-4.5746	-1.4768	-1.7219	5.096	5.09615
15	CLERMONT	WOOD PROCESSING	1.3757	-0.8887	-4.1382	-0.6704	-3.5752	-1.236	1.37571
16	LEBEL-SUR-QUEVILLON	WOOD PROCESSING	-1.6512	-2.2263	-6.4163	-4.2694	-3.1492	-2.755	0.00000
17	TERRACE BAY	WOOD PROCESSING	-3.8570	-1.9617	-5.1028	-5.5414	-1.4652	-2.791	0.00000
18	ALEXANDER	WOOD PROCESSING	-2.3480	-1.6857	-3.4466	3.1815	-1.8517	-3.877	3.18146
19	HOUSTON	WOOD PROCESSING	-3.4790	0.4669	-4.4602	-3.2545	-4.0073	-8.887	0.46690

RELATIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION SIZE CLASS AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES
1	WABUSH	METAL MINING	0.72416	0.28879	0.361664	0.77192	0.372578	0.85880
2	MURDOCHVILLE	METAL MINING	0.41516	0.08094	0.038013	0.17308	0.223771	0.65986
3	GAGNON	METAL MINING	0.71648	0.09524	0.178915	1.06924	0.421290	0.52740
4	FERMONT	METAL MINING	0.38705	0.07075	0.066447	0.34038	0.391158	0.64202
5	CHAPAIS	METAL MINING	0.57604	0.00000	0.642801	0.50657	0.349292	0.77736
6	MANITOUWADGE	METAL MINING	0.66480	0.61862	0.249014	0.23622	0.635215	0.67966
7	URANIUM CITY AND DISTRICT	METAL MINING	0.73861	0.18783	0.308737	1.15475	0.882764	0.62117
8	LOGAN LAKE	METAL MINING	0.69705	0.11325	0.372301	0.06054	0.626182	0.64454
9	SHIPTON	NON METAL MINING	0.37095	0.25035	0.391896	0.26766	0.369118	0.77014
10	ESTERHAZY	NON METAL MINING	1.09469	0.30982	0.533489	1.38019	0.342601	0.90543
11	GRANDE CACHE	NON METAL MINING	0.90590	0.28797	0.432760	0.95446	0.605042	0.77072
12	ELKFORD	NON METAL MINING	0.24043	0.07813	0.513667	0.29236	0.302382	0.48069
13	SPARWOOD	NON METAL MINING	0.44672	1.10017	0.742702	0.91896	0.418200	0.79323
14	DALHOUSIE	WOOD PROCESSING	0.78812	0.38415	0.420939	0.78720	0.743387	1.21128
15	CLERMONT	WOOD PROCESSING	1.12679	0.76046	0.476172	0.90340	0.467183	0.94876
16	LEBEL-SUR-QUEVILLON	WOOD PROCESSING	0.84782	0.39991	0.187808	0.38482	0.530675	0.88578
17	TERRACE BAY	WOOD PROCESSING	0.64452	0.47123	0.354076	0.20153	0.781633	0.88427
18	ALEXANDER	WOOD PROCESSING	0.78360	0.54563	0.563727	1.45842	0.724039	0.83926
19	HOUSTON	WOOD PROCESSING	0.67936	1.12585	0.435418	0.53105	0.402787	0.63157

TABLE 6

POSITIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION 1000-2499
AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES	POSITIVE DEVIANCE
1	BUCHANS	METAL MINING	-1.0874	-2.6521	-5.1763	-4.5863	-0.3468	1.264	1.2642
2	SCHEFFERVILLE	METAL MINING	-1.7696	-2.3841	-5.7611	-0.5415	-1.4433	3.043	3.0430
3	MCGARRY	METAL MINING	-5.2922	-1.5709	-4.5413	-3.9513	-2.1317	-6.768	0.0000
4	EAR FALLS	METAL MINING	1.0552	-3.3100	-1.8024	0.9266	0.2724	-7.447	2.2542
5	BALMERTOWN	METAL MINING	-6.5010	-1.5163	-5.3563	-2.9726	-0.2288	-4.483	0.0000
6	SNOW LAKE	METAL MINING	-0.8681	-1.5556	-6.5652	-2.4664	-1.5164	-6.631	0.0000
7	LEAF RAPIDS	METAL MINING	-1.9787	-2.5035	-5.5371	-2.9310	-1.9810	-4.275	0.0000
8	LYNN LAKE	METAL MINING	-5.8841	-1.4321	-5.2721	5.1771	-1.8541	-1.763	5.1771
9	CREIGHTON	METAL MINING	6.8435	-2.7605	-5.5016	-3.2633	3.7307	-1.541	10.5742
10	MONTROSE	METAL MINING	4.5193	-3.3100	-4.4951	-1.2503	0.5847	-2.951	5.1040
11	WARFIELD	METAL MINING	2.2083	-2.3621	-2.4107	0.0751	-0.8707	-3.463	2.2834
12	STEWART	METAL MINING	-4.0150	-2.0600	-4.6500	2.1900	-0.6100	-6.170	2.1900
13	FRASER LAKE	METAL MINING	-7.6130	-1.2830	-1.0689	-3.8573	0.4711	-10.258	0.4711
14	GRANISLE	METAL MINING	-8.3155	-2.6477	-7.1500	-3.9110	-4.2855	-7.850	0.0000
15	FARO	METAL MINING	-4.4676	-2.7353	-4.8511	-2.5370	-1.0123	-6.903	0.0000
16	PINE POINT	METAL MINING	-4.3768	-2.2574	-5.5711	-3.9284	-0.8732	-5.578	0.0000
17	BAIE VERTE	NON METAL MINING	0.9105	-0.5577	-3.4803	-5.6426	-1.0228	3.727	4.6372
18	EAST-BROUGHTON-STATION	NON METAL MINING	-4.2346	-0.6073	-5.3482	-4.7582	-3.8082	-5.303	0.0000
19	SAINT-JOSEPH-DE-COLERAINE	NON METAL MINING	-1.7132	-2.7002	-4.1012	1.3668	-1.9515	-9.005	1.3668
20	FOX CREEK	NON METAL MINING	1.8183	-2.7892	3.7875	-4.4767	-3.0058	-5.232	5.6058
21	SWAN HILLS	NON METAL MINING	-5.1685	-0.4645	0.9801	0.3506	-2.7645	-6.566	1.3307
22	HANTSPORT	WOOD PROCESSING	0.0945	0.2298	-0.9553	-2.1352	-3.8401	-6.491	0.3243
23	NELSON	WOOD PROCESSING	-0.1162	-1.7227	-2.3881	-6.5600	-2.4354	-9.722	0.0000
24	NELSON-MIRAMICHI	WOOD PROCESSING	1.5750	1.3629	-0.6079	-1.8871	0.9321	-3.728	3.8699
25	MACKAWIC	WOOD PROCESSING	-2.9733	-1.6433	-5.4833	-4.8933	-0.6100	0.080	0.0800
26	EEL RIVER CROSSING	WOOD PROCESSING	7.6532	-3.3100	-1.8868	-0.5450	-3.3544	-3.623	7.6532
27	SAINT-JUSTE-DE-BRETENIERES	WOOD PROCESSING	-5.6400	-3.3100	-7.1500	-6.5600	-5.6100	-0.420	0.0000
28	NOTRE-DAME-DE-PORTNEUF	WOOD PROCESSING	-2.4971	-2.0113	-2.6045	-0.7158	-0.4152	-6.186	0.0000
29	CRABTREE	WOOD PROCESSING	0.1161	0.5924	-1.7841	-5.5844	-0.2441	1.482	2.1910
30	TEMISCAMING	WOOD PROCESSING	-3.1535	-1.1478	-6.6095	-5.4789	0.8765	3.526	4.4024
31	SAINT-PLACIDE-DE-BEARN	WOOD PROCESSING	1.4711	-3.3100	1.1833	-3.7822	-1.4433	-8.531	2.6544
32	NOTRE-DAME-DE-LA-DORE	WOOD PROCESSING	-1.7829	-1.8814	-3.5786	2.0114	-2.7529	-3.134	2.0114
33	SMOOTH ROCK FALLS	WOOD PROCESSING	-1.7582	-2.3248	-4.1943	-1.6339	2.2718	0.240	2.5119
34	FAUQUIER	WOOD PROCESSING	4.0697	-3.3100	-1.5048	-1.7213	0.0352	-3.065	4.1048
35	WHITE RIVER	WOOD PROCESSING	0.1344	-3.3100	-5.6462	3.2144	-2.6025	2.392	5.7409
36	RED ROCK	WOOD PROCESSING	-5.6132	-3.3100	-6.4789	-5.8889	-2.9254	2.412	2.4122
37	MARATHON	WOOD PROCESSING	-2.4971	-2.1195	-4.7690	-2.9886	1.5329	0.596	2.1287
38	LONGLAC	WOOD PROCESSING	-0.7331	-1.6906	-3.5063	-1.7017	0.8677	-6.631	0.8677
39	HUDSON BAY	WOOD PROCESSING	0.6404	0.8956	-6.6827	2.3185	0.4648	-0.457	4.3193
40	GOLD RIVER	WOOD PROCESSING	-5.9665	-2.4937	-3.4765	-2.4784	-2.3447	-1.604	0.0000
41	TAHSIS	WOOD PROCESSING	-6.2419	-2.8246	-6.1791	-4.6183	-1.7265	-9.799	0.0000
42	PORT ALICE	WOOD PROCESSING	-5.9558	-2.7837	-3.4658	-4.4547	-3.5047	-2.946	0.0000
43	PORT ST. JAMES	WOOD PROCESSING	4.4569	-1.5479	-4.9474	-2.1547	1.4385	-1.275	5.8954

RELATIVE DEVIANCE FOR SELECTED SERVICES BY POPULATION SIZE CLASS
AND TYPE OF RESOURCE TOWN

OBS	NAME	RESOURCE TYPE	RETAIL	WHOLE-SALE	CONSTRUC-TION	TRANSPOR-TATION	PUBLIC SERVICES	COMMUNITY SERVICES
1	BUCHANS	METAL MINING	0.88720	0.19876	0.27604	0.30087	0.93817	1.05639
2	SCHEFFERVILLE	METAL MINING	0.81643	0.27974	0.19425	0.91746	0.74272	1.13573
3	MCGARRY	METAL MINING	0.45102	0.52542	0.36485	0.39767	0.62001	0.69813
4	EAR FALLS	METAL MINING	1.10946	0.00000	0.74792	1.14125	1.04855	0.66785
5	BALMERTOWN	METAL MINING	0.32562	0.54191	0.25087	0.54687	0.95921	0.80005
6	SNOW LAKE	METAL MINING	0.90995	0.53003	0.08179	0.62402	0.72969	0.70426
7	LEAF RAPIDS	METAL MINING	0.79474	0.24364	0.22558	0.55321	0.64689	0.80933
8	LYNN LAKE	METAL MINING	0.38961	0.56735	0.26265	1.78919	0.66950	0.92138
9	CREIGHTON	METAL MINING	1.70991	0.16600	0.23054	0.50255	1.66500	0.93127
10	MONTROSE	METAL MINING	1.46881	0.00000	0.37131	0.80941	1.10422	0.86838
11	WARFIELD	METAL MINING	1.22908	0.28636	0.66284	1.01144	0.84480	0.84556
12	STEWART	METAL MINING	0.58351	0.37764	0.34965	1.33384	0.89127	0.72480
13	FRASER LAKE	METAL MINING	0.21027	0.61239	0.85050	0.41200	1.08397	0.54247
14	GRANISLE	METAL MINING	0.13740	0.20008	0.00000	0.40381	0.23610	0.64985
15	FARO	METAL MINING	0.53656	0.17363	0.32152	0.61326	0.81955	0.69212
16	PINE POINT	METAL MINING	0.54597	0.31802	0.22083	0.40116	0.84436	0.75121
17	BAIE VERTE	NON METAL MINING	1.09445	0.83151	0.51325	0.13985	0.81767	1.16623
18	EAST-BROUGHTON-STATION	NON METAL MINING	0.56073	0.81653	0.25200	0.27466	0.32118	0.76348
19	SAINT-JOSEPH-DE-COLERAINE	NON METAL MINING	0.82229	0.18422	0.42640	1.20836	0.65215	0.59833
20	FOX CREEK	NON METAL MINING	1.18862	0.15735	1.52972	0.31758	0.46420	0.76661
21	SWAN HILLS	NON METAL MINING	0.46385	0.85968	1.13707	1.05344	0.50722	0.70712
22	HANTSPORT	WOOD PROCESSING	1.00980	1.06943	0.86639	0.67451	0.31549	0.71049
23	NELSON	WOOD PROCESSING	0.98795	0.47955	0.66600	0.00000	0.56588	0.56639
24	NELSON-MIRAMICHI	WOOD PROCESSING	1.16338	1.41175	0.91497	0.71233	1.16614	0.83370
25	MACKAWIC	WOOD PROCESSING	0.69156	0.50352	0.23310	0.25407	0.89127	1.00357
26	EEL RIVER CROSSING	WOOD PROCESSING	1.79390	0.00000	0.73611	0.91693	0.40207	0.83840
27	SAINT-JUSTE-DE-BRETENIERES	WOOD PROCESSING	0.41494	0.00000	0.00000	0.00000	0.00000	0.98127
28	NOTRE-DAME-DE-PORTNEUF	WOOD PROCESSING	0.74096	0.39236	0.63573	0.89088	0.92599	0.72408
29	CRABTREE	WOOD PROCESSING	1.01204	1.17898	0.75047	0.14872	0.95648	1.06612
30	TEMISCAMING	WOOD PROCESSING	0.67287	0.65322	0.07560	0.16480	1.15624	1.15727
31	SAINT-PLACIDE-DE-BEARN	WOOD PROCESSING	1.15260	0.00000	1.16550	0.42344	0.74272	0.61949
32	NOTRE-DAME-DE-LA-DORE	WOOD PROCESSING	0.81506	0.43159	0.49950	1.30662	0.50929	0.86020
33	SMOOTH ROCK FALLS	WOOD PROCESSING	0.81761	0.29765	0.41338	0.75093	1.40495	1.01071
34	FAUQUIER	WOOD PROCESSING	1.42217	0.00000	0.78953	0.73761	1.00627	0.86328
35	WHITE RIVER	WOOD PROCESSING	1.01395	0.00000	0.21032	1.49001	0.53610	1.10669
36	RED ROCK	WOOD PROCESSING	0.41772	0.00000	0.09387	0.10231	0.47853	1.10759
37	MARATHON	WOOD PROCESSING	0.74096	0.35966	0.33300	0.54443	1.27324	1.02658
38	LONGLAC	WOOD PROCESSING	0.92395	0.48925	0.50961	0.74059	1.15468	0.70426
39	HUDSON BAY	WOOD PROCESSING	1.06643	1.27058	0.06536	1.35343	1.08285	0.97960
40	GOLD RIVER	WOOD PROCESSING	0.38107	0.24662	0.51377	0.62220	0.58205	0.92847
41	TAHSIS	WOOD PROCESSING	0.35250	0.14666	0.13579	0.29600	0.69225	0.56295
42	PORT ALICE	WOOD PROCESSING	0.38218	0.15901	0.51527	0.32092	0.37527	0.86859
43	PORT ST. JAMES	WOOD PROCESSING	1.46234	0.53236	0.30806	0.67154	1.25641	0.94315

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